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| 10/009,656      | 03/26/2002  | KarlHeinz Arndt      | P01,0404            | 8441             |

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| EXAMINER |
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PAYNE, SHARON E

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| ART UNIT | PAPER NUMBER |
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2875

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/009,656 | <b>Applicant(s)</b><br>ARNDT ET AL. |  |
|                              | <b>Examiner</b><br>Sharon E. Payne   | <b>Art Unit</b><br>2875             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 18-20 and 22-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-20, 22-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>0803</u> . | 6) <input type="checkbox"/> Other: ____  |

### **DETAILED ACTION**

1. The indicated allowability of claim 21 (now part of claim 18) is withdrawn in view of the newly discovered reference(s) to LEDs on a curved surface. Rejections based on the newly cited reference(s) follow.

#### ***Claim Rejections - 35 USC § 112***

2. Claims 18-20, 22-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18 is indefinite for reciting the limitation "such that said plurality of LEDs are arranged in a spatial form determined by said one of a curved surface, singly angled surface or multiply angled surface of the cooling member." The claim ends with this phrase, and it is not clear what happens when the secondary surface is applied to a partial region of a device housing or to an automobile chassis.

Claims 19-20, 22-37 are necessarily included due to their dependency.

#### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 18, 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochstein (U.S. Patent 6,045,240) in view of Roney et al. (U.S. Patent 5,528,474) and further in view of Abtahi et al. (U.S. Patent 5,890,794).

Regarding claim 18, Hochstein discloses a printed circuit board having a principal surface and a secondary surface (abstract), a plurality of LEDs arranged on the principal surface (reference number 28, Fig. 3), a metallic layer provided on the secondary surface electrically insulated from the LEDs (column 5, lines 32-54) and a cooling member connected to the secondary surface (Fig. 3, on the right), wherein the printed circuit board is secured to the cooling member with a thermally conductive adhesive (abstract). Hochstein does not specifically disclose a plastic circuit board or a secondary surface applied to a curved surface.

Roney et al. discloses a printed circuit board comprising a plastic material (column 3, lines 20-25).

Abtahi et al. discloses a secondary surface applied to a curved surface of the cooling member such that the plurality of LEDs are arranged in a spatial form determined by the curved surface of the cooling member (Fig. 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plastic circuit board of Roney et al. in the apparatus of Hochstein to provide a circuit board made of insulating material to prevent a short circuit in the apparatus.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the curved surface of Abtahi et al. in the apparatus of Hochstein to make the LEDs conform to a specific contour. See Figs. 3 and 4 of Abtahi et al.

Concerning claim 19, Hochstein discloses the metallic layer comprising copper (column 8, lines 11-29).

Regarding claim 28, Hochstein does not disclose the lighting device comprising the LED arrangement according to claim 18. For the reasons discussed in the analysis of claim 18 the combination of Hochstein, Roney et al. and Abtahi et al. discloses the LED arrangement according to claim 18. See especially Fig. 4 of Abtahi et al.

6. Claims 20 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochstein in view of Roney et al. and Abtahi et al. as applied to claim 19 and further in view of Zouzoulas et al. (U.S. Patent 5,059,778).

Concerning claim 20, Hochstein does not disclose a flexible printed circuit board structure. Zouzoulas et al. discloses a flexible printed circuit board structure (column 6, lines 38-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the flex board of Zouzoulas et al. in the apparatus of Hochstein to provide a flexible electrical connection to an LED.

Regarding claim 35, Hochstein does not disclose a flex board. Zouzoulas et al. discloses a flex board (column 6, lines 38-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the flex board of Zouzoulas et al. in the apparatus of Hochstein to provide a flexible electrical connection to an LED.

7. Claims 22-26, 29 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochstein in view of Roney et al. and Abtahi et al. as applied to claim 18 above, and further in view of Pederson (U.S. Publication 2003/0021121 A1).

Regarding claim 22, Hochstein does not disclose the metallic layer comprising a meander-like lateral structure. Pederson discloses the metallic layer having a meander-like lateral structure (Figs. 4 and 11B). (The circuit in Fig. 11B can be put onto the circuit board of Pederson.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the circuit (metallic layer) of Pederson in the apparatus of Hochstein to conduct electricity as desired.

Concerning claim 23, Hochstein discloses the cooling member comprising a metal (column 3, lines 15-30).

Regarding claim 24, Hochstein discloses a surface of the cooling member remotely positioned from the printed circuit board comprising cooling ribs (Fig. 3).

Concerning claim 25, Hochstein discloses LEDs provided with lenses (Figs. 3 and 4). (The dome on top of the LED, reference number 28, is the lens.)

Regarding claim 26, Hochstein discloses a circuit board that electrically insulates the metallic layer from the plurality of LEDs (column 5, lines 2-3).

Concerning claim 29, Hochstein does not disclose the lighting device as an exterior lighting fixture of a motor vehicle. Pederson discloses the lighting device as an exterior lighting fixture of a motor vehicle (Fig. 1).

Abtahi et al. discloses the cooling member comprising a curvature adapted to an outside contour of the motor vehicle (Fig. 3). (Fig. 4 of Pederson discloses a circuit board shaped as a cylinder like the cooling member of Abtahi et al.)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the exterior lighting fixture of Pederson in the apparatus of Hochstein to incorporate LEDs into vehicle lighting to reduce the amount of heat produced by the lighting apparatus.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the cooling member of Abtahi et al. in the apparatus of Hochstein to shape the circuit board.

Concerning claim 36, Hochstein discloses the metal as aluminum (column 3, lines 15-30).

8. Claims 27 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochstein in view of Roney et al., Abtahi et al. and Pederson as applied to claim 26 above, and further in view of Deese (U.S. Patent 5,806,965).

Regarding claim 27, Hochstein does not disclose the circuit board comprising polyester. Deese discloses the circuit board comprising polyester (column 2, lines 2-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the polyester circuit board of Deese in the apparatus of Hochstein to provide insulation between the LEDs and the metal layer.

Concerning claim 37, Hochstein does not disclose a polyester film. Deese discloses a polyester film. (column 2, lines 2-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the polyester film of Deese in the apparatus of Hochstein to provide insulation between the LEDs and the metal layer.

#### ***Allowable Subject Matter***

9. Claims 30-34 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.



10. The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to show a cooling member that has a cylindrical hollow shape with the printed circuit board applied to an outside wall thereof.


### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (571) 272-2379. The examiner can normally be reached during regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571) 272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sep

  
Stephen Husar  
Primary Examiner